APPLICATION FOR
UNITED STATES LETTERS PATENT

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

Be it known that I, Marla D. Conklin, a citizen of the United States of America, and resident of the State of Colorado, having a postal address of 34 Rose Court, Windsor, Colorado, 80550, have invented a new and useful **"Improved Bite Guard and Method of Manufacture"**, of which the following forms the specification.

"Improved Bite Guard and Method of Manufacture"

CROSS REFERENCE TO RELATED APPLICATIONS

This is a continuation in part application of U.S. Patent Application Serial No. 09/904,602, entitled "Bite Guard and Method of Manufacture" which was filed in the United States Patent and Trademark Office on July 13, 2001.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

REFERENCE TO MICROFICHE APPENDIX

Not applicable.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to the field of teeth grinding prevention devices in general and in particular to a unique bite guard that not only prevents the clenching of the user's jaws and pinching or biting of the cheeks but also involves the novel method of manufacture of the mouth guard.

Description of Related Art

As can be seen by reference to the following U.S. Patent Nos. 5,921,240; 4,304,227; 5,328,362; and, 5,823,193, the prior art is replete with myriad and diverse mouthpiece constructions to prevent jaw clenching, teeth grinding, snoring, etc.

While all of the aforementioned prior art constructions are more than adequate for the basic purpose and function for which they have been specifically designed, they are uniformly deficient with respect to their failure to provide a simple, efficient, and practical arrangement to relax a patient's temporal muscles and relieve the strain of teeth clenching in the patient's molar region by employing a custom made bite guard appliance whose design is intended to facilitate speech while wearing the appliance.

To date, no one has developed a custom made clear acrylic bite guard appliance nor provided a specific method for the fabrication of such a construction.

As a consequence of the foregoing situation, there has existed a longstanding need among dentists for a new and improved lightweight bite guard appliance having a slim truncated profile that leaves the patient's molar region exposed yet maintains the opposed tooth surfaces at a predetermined spacing from one another to provide the desired therapeutic results; and the provision of such a construction is the stated objective of the present invention.

BRIEF SUMMARY OF THE INVENTION

Briefly stated, the custom made bite guard construction that forms the basis of the present invention comprises in general a custom fit upper portion, a custom fit lower portion and an intermediate portion that joins the upper portion to the lower portion and is designed and dimensioned to create a specific spacing between the opposed tooth surfaces in the patient's molar regions.

As will be explained in greater detail further on in the specification, both the custom fit upper and lower portions are fabricated by the same method to produce independent teeth arch coverings which are trimmed to remove entirely the covering material from the molar regions of the respective teeth arches as well as selected portions extending from the gum line to the incisal edge of the bicuspid and anterior teeth areas of the upper and lower portions.

The independent upper and lower portions are then mounted on a model set of teeth disposed in a bite articulator wherein the opposed surfaces of the upper and lower portions are further worked on to produce a generally smooth engagement between the opposed surfaces while still maintaining a desired combined thickness of the opposed surfaces.

At this juncture, the opposed surfaces are bonded together to form the intermediate portion of the finished custom made bite guard construction.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

These and other attributes of the invention will become more clear upon a thorough study of the following description of the best mode for carrying out the invention, particularly when reviewed in conjunction with the drawings, wherein:

FIG. 1 is an enlarged detail view of a user's clenched bite that places undue stress on jaw muscles and tooth enamel;

FIG. 2 is an enlarged detail relaxed view of the bite produced while wearing the protective bite guard of this invention;

FIG. 3 is an isolated perspective view of the first version of the finished bite guard construction;

FIG. 4 is a cross-sectional view of the first version of the bite guard construction taken through line 4-4 of Fig. 3;

FIG. 5 is a front elevation view of the bite guard engaged by the user's teeth.

FIG. 6 is an isolated perspective view of the second version of the bite guard construction; and,

FIG. 7 is a cross-sectional view of the second version taken through line 7-7 of Fig. 6.

DETAILED DESCRIPTION OF THE INVENTION

As can be seen by reference to the drawings, and in particularly to FIG. 2, the first version of the bite guard construction that forms the basis of the present invention is designated generally by the reference number **10**. As can best be seen by reference to Fig. 3, the construction **10** includes an impression based upper portion **11** and an impression based lower portion **10** which are precisely formed in a specific

manner and joined together at a bite junction **13** wherein the specific method of fabricating the bite guard construction **10** will now be described in detail.

The fabrication of the upper **11** and lower **12** portions of the bite guard construction **10** follows the same basic steps and will therefore be described in unison.

First of all, it is necessary to obtain alginate impressions of the full upper and lower arches of a patient's teeth. Then it is necessary to obtain a bite registration that is comfortable to the patient.

Once the bite registration has been established, it is then necessary to fabricate two sets of models of the patient's upper **101** and lower **102** arches. Then using the first set of models which have been individually prepared by trimming excess material and reaming holes in the bottom of them to allow proper suction in a vacuum former machine, we are ready to begin the actual formation of the bite guard construction.

At this point, the model of the upper arch **101** in the first set of models is inserted into a vacuum forming machine along with a 5"x 5" .060 gauge sheet of thermoforming material such a clear acrylic or the like. The heater on the vacuum former is then turned on until the thermoforming material slopes approximately half way down to the model whereupon the vacuum is initiated to form the material precisely around the model.

The foregoing procedure is repeated again for the lower arch **102** and after the formed material on both the first set of models of the upper and lower arches has cooled, the excess material is removed from each half of the first set of models using a separating disc.

At this juncture, the coated material on the models of the upper and lower arch from the molars up to the bicuspid areas are removed while leaving 1 mm below the remaining teeth both front and back leaving the bicuspid area and all of the anterior teeth on both the upper and lower arch covered with material,

The next step involves removing selected portions of the coated material from the molar region, the bicuspid and anterior teeth areas of the model; wherein, the coating material for the "CQ-1" maxillary teeth is removed from the gum line to incisal edge starting at canines to centrals 1-2 mm. The "CQ-2" upper bi-cuspids to centrals are trimmed in the same manner which ultimately will allow the user to release their

teeth from the finished bite guard construction **10** in order to speak. Furthermore, the material removal step involves removing the material entirely from the molar region and trimming the material up to the bi-cuspid area and leaving the anterior teeth from the gum line to the incisal edge intact front and back, except for the trimming line of the two centrals 1-2 mm from incisal edge sloping upwardly to the first bi-cuspid both right and left side. This ends the initial fabrication of the upper **11** and lower **12** portions of the bite guard construction **10**.

Once this stage has been reached, it is then necessary to utilize the second set of models of the upper and lower arches and mount them for bite registration in the normal fashion such as by setting the "bite" in a Vertex bite articulator.

When the bite registration has been set, the upper **11** and lower **12** portions of the construction are independently mounted on the second set of models of the teeth arches; and, by using articulation paper between the contacting surfaces of the upper and lower portions **11 12** can be removed by grinding.

This grinding process will continue until either uniform marking by the articulation paper occurs or until a 1-2 mm space **103** between the molar regions of the upper **11** and lower **12** portions is achieved.

At this juncture, the bite portion **13** of the bite guard construction **10** is fabricated by coating the contacting surfaces of the upper **11** and lower **12** portions of the construction with a cyanocrylate gel as indicated by the dashed lines in Fig. 4, wherein the joined inwardly directed bite portion **13** completes the fabrication of the finished bite guard construction **10** which relaxes a patient's temporal muscles **105** and eliminates the strain of teeth clenching in the patient's molar region.

Turning now to Figs. 6 and 7, it can be seen that in the second version of the bite guard construction designated generally as **10'**, the bite portion **13'** is bifurcated into a gently upwardly sloped upper bite segment **13"** and a more severely downwardly sloped lower **13"** bite segments are configured to conform to the rear surfaces of a patient's upper and lower teeth, as well as, a discrete portion of a patent's upper and lower palates such that the second version of the bite guard construction **10'** has a generally pi-shaped cross-sectional configuration.

Furthermore in this version of the invention, as external seaming material bead **15** is created between the upper **11** and lower **12** portions of the construction **10**

wherein, the bead **15** is composed of a non-toxic adhesive glue that is injected into the seam line between the upper **11** and lower **12** portions to provided a smooth transition zone for contact with the user's tongue and lips.

Although only an exemplary embodiment of the invention has been described in detail above, those skilled in the art will readily appreciate that many modifications are possible without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention as defined in the following claims.